

The LongPath

A North Alabama DX Club Publication

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How to Join

* Come to a club meeting;
* or send in an application by mail (form on www.NADXC.org)

From the President

Well, a lot has happened over the past month. For one, I got a new left hip, which has greatly curtailed all athletic activities for me. Now I have a matching pair. For another, the corona virus has now caused us to cancel our August Hamfest. I suppose it was inevitable. There was just no way to practice any sort of social distancing or food handling. The threat is real and has killed over 100,000 of us in the last three months. But I am determined that our club activities are the one way we still have to recover our beloved hobby. So, all of you, please pitch in to help make NADXC our road to "hamfest recovery." Don't be silent – let us hear from you.

Last month I was pretty confident that many members would like help getting on the ARRL DXCC listing (which is also reproduced on our web page). But judging from the feedback I've gotten on it, the interest really wasn't very high. I had thought presentations on how to work the ARRL bureaucracy to get those 100 countries

would be very helpful – since exactly half of our members have worked those elusive 100 countries. So, unless I hear otherwise, I'll assume most of our members enjoy technical and historical presentations, and would rather hear those.

As you know, the virus has pretty well wiped out team DXpeditions, but the smaller ones are still out there. If you look to your DX spotter, you'll see plenty of DX out there, and the bands are supporting them. They may not be the really rare ones, but if you haven't scored, maybe 150 on DXCC, you'll want many of the spots currently available.

This month's Long Path has a few really great articles. Many of you visited the hamshack of Bruce, AC4G, at the club picnic last October. His shack looked like what you'd expect after decades of collecting equipment. He decided to take up carpentry and accom-

Cont'd on p. 6

Huntsville Hamfest

By Mark Brown, N4BCD, Huntsville Hamfest Chairman

I'm composing this article tonight (Friday, June 5) while in a Zoom meeting with the Dayton Amateur Radio Association and the Orlando Board to chat and commiserate about the painful decisions to cancel Hamvention and Hamfest this year. As a ham community, we're united in thoughts and hope that the 2021 season, and indeed our country will weather this storm.

We want to capture here the posting that was created to share the news along with some more background info that went to the dealers when this painful decision was made Wednesday evening June 3, 2020 and published the following day.

73, Mark

Press Release to Committee, Webpage, and Media

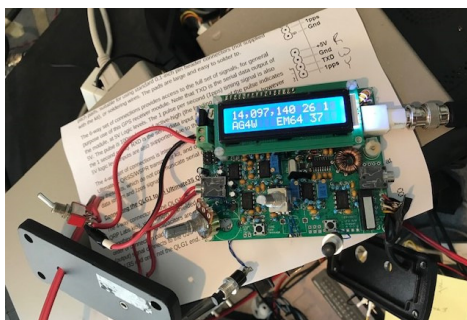
The Huntsville Hamfest Board of Directors has been monitoring fallout from the COVID-19 pandemic, particularly large-gathering guidance and mandates from the CDC and the State of Alabama. As our world turned upside down in March we held out hope that we could anticipate a brighter picture in August for the Hamfest: including relaxation of social distancing guidelines and strict capacity limits on venues where hams could gather socially to see and buy new equipment, attend interesting forums, network with friends, and barter for used equipment.

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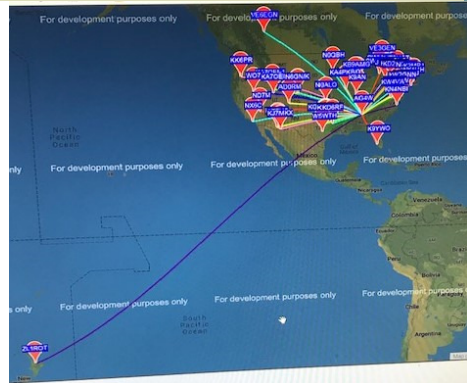
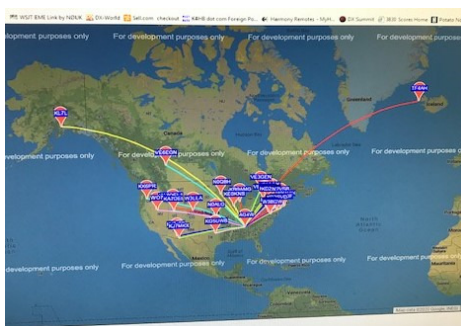
Retirement and COVID Project Update

By Steve Werner, AG4W

Last month I covered packaging my QCX transceiver from QRP Labs. This month I got the radio to operate as a WSPR beacon. If you have never tried WSPR I highly encourage you to do it. This was really interesting to me because the radio got the time and location reference from my external GPS unit. It also was used to provide an accurate stable frequency for WSPR. You go to the WSPR website WSPRnet.org to see how well your beacon signal is being heard. The 3rd party maps are particularly interesting. You can see from the picture that the radio



showed it was acting as a WSPR beacon and the time. I programmed it to send once every 10 minutes. It transmits my call and grid square for 2 minutes. You can see from the maps that with 5 watts my signal was heard in Alaska when pointed northwest, New Zealand when pointed southwest, Brazil when pointed southeast, and New England when pointed northeast. The data that you get can help you understand the gain and front to back and front to side ratios of your directive antennas. It can also give you good insight into current propagation.



Spot Database													
Specify query parameters													
spots:													
timestamp	Call	Mhz	SNR	Drift	Grid	Pwr	Reporter	RGrid	km	az			
2020-05-18 17:52	AG4W	14.097139	-15	-2	EM64rs	5	K5XL	EM12kp	1007	259			
2020-05-18 17:52	AG4W	14.097143	-7	-2	EM64rs	5	KAAPKBO	EN41W	822	332			
2020-05-18 17:52	AG4W	14.097139	-2	-2	EM64rs	5	KB9AMG	EN52X	926	351			
2020-05-18 17:52	AG4W	14.097154	-5	-1	EM64rs	5	W3LLA	DN70in	1747	297			
2020-05-18 17:52	AG4W	14.097138	-11	-3	EM64rs	5	KE0KNS	EN41tp	834	338			
2020-05-18 17:52	AG4W	14.097143	-4	-2	EM64rs	5	VE7BPC	CN89f	3373	310			
2020-05-18 17:52	AG4W	14.097140	-17	-2	EM64rs	5	KG2ZDA	EM12qv	953	260			
2020-05-18 17:52	AG4W	14.097169	-8	-2	EM64rs	5	N2ALO	EN41s	1023	297			
2020-05-18 17:52	AG4W	14.097143	-18	-2	EM64rs	5	KD2CLR	FN13gb	1210	38			
2020-05-18 17:52	AG4W	14.097139	-18	-1	EM64rs	5	K9YWO	EL96ck	1032	153			
2020-05-18 17:52	AG4W	14.097166	+5	-2	EM64rs	5	N0QSH	EN25	1391	331			
2020-05-18 17:52	AG4W	14.097179	-23	-2	EM64rs	5	W4TJ	DN13ug	2729	300			
2020-05-18 17:52	AG4W	14.097141	-20	-1	EM64rs	5	KB2SVD	FN20hh	1198	56			
2020-05-18 17:52	AG4W	14.097139	+5	-2	EM64rs	5	KD2OM	FN12px	1203	38			
2020-05-18 17:52	AG4W	14.097137	-9	-2	EM64rs	5	K9OZT	EN52vx	923	352			
2020-05-18 17:52	AG4W	14.097013	-25	-2	EM64rs	5	KA9KQH	EN55fu	624	336			
2020-05-18 17:52	AG4W	14.097138	-13	-2	EM64rs	5	AE7YQ	DN41ix	2298	269			
2020-05-18 17:52	AG4W	14.097081	-26	-2	EM64rs	5	KEBHEC	CN70wt	3344	293			
2020-05-18 17:52	AG4W	14.097140	-9	-2	EM64rs	5	ND7M	DN16xf	2665	282			
2020-05-18 17:52	AG4W	14.097142	-11	-1	EM64rs	5	VE8EON	DN23pe	3005	322			
2020-05-18 17:52	AG4W	14.097152	-25	-2	EM64rs	5	KEDYIN	EN35oa	1257	337			
2020-05-18 17:52	AG4W	14.097139	-17	-2	EM64rs	5	KD9EN	EN41xr	832	340			
2020-05-18 17:52	AG4W	14.097131	-1	-2	EM64rs	5	W0TJ	DN10cw	2812	293			
2020-05-18 17:52	AG4W	14.097127	-10	-2	EM64rs	5	AK7V	DN14ei	2635	278			
2020-05-18 17:52	AG4W	14.097139	-1	-2	EM64rs	5	K0KPR	CN94k	3137	301			
2020-05-18 17:52	AG4W	14.097139	+16	-2	EM64rs	5	KATOEI-1	DN3 tno	2365	296			

I have worked another 9 new grid squares on 6 meters this month. On May the 26th I was able to hear and work Europe and Africa on 6 meters. I really enjoy working new grid squares and countries on 6 meters. CT3MD was a new country for me this month on 6 meters. Last month I encouraged everyone to get on 6 meters for E skip season. I encourage everyone to try a new band or mode this year. It is amazing how much fun it is to start from 0 again on DXCC. I have worked about 25 countries on 2 meter EME and 55 on 6 meters and it is exciting when Scotland or Madeira Island is a new one. When sunspots are low it is a good time to try the low bands, VHF or UHF. The Russians have activated the RS-44 satellite and it is offering more range than many of the other low earth orbiting satellites. Working stations via satellite is another interesting activity. Working RS-44 is one of my plans for June.

The change to horizontal polarization for my EME 2X13 element 2 meter yagi was a nice improvement. This month I have worked a new band country and 11 new initial contacts. I have now contacted 100 different stations on EME. Of those 100 stations 25 were from the US and almost all the rest from Europe. The first time I tried horizontal polarization I worked 12 stations in 4 hours.



If anyone has a 100pf high voltage variable capacitor I need one for my 6 meter amplifier project. I also can use a low voltage 50pf variable capacitor. I am kicking myself because I know we had some in N4KG, Tom's estate. I think some of the club members may have bought some of them. My junk box is a little better organized since I retired. Storage cabinets and small open



bins are great for the small parts and hardware. I have found it really nice to be able to lay your hands on connectors and small parts quickly. You can also see what you are running short on when hamfest time comes.

Cont'd on p. 3

Retirement and COVID Project Update

(cont'd from p. 2)

I have also worked with Bob, K8KI to try to fix my old Yaesu G-1000DXA rotor controller this month. It was damaged by a lightning strike in 2012. So far we have found 2 bad parts and one open trace. The speed control was not working properly and would only work at high speed. With those fixes now it does nothing. It is amazing how sometimes you have to go backwards a little before you can move forward.

This month I also did maintenance on my two beverage antennas. I use a small aluminum box at the end of my beverages to house the termination resistor and a relay to switch the resistor in and out. I had noticed that the resistor was always switched out making it bidirectional on both beverages. After removing the boxes and inspecting them one of the relays boxes became a home for some kind of bug that thought the relay was a great place to live. It was corroded and no longer worked. The other box had a loose lead. I was surprised the resistors were still in good shape. These usually get destroyed over time by nearby lightning strikes. The carpenter bees sure did a lot of damage to the 4X4 post on one of them.



Now is the time to fix antennas. Check for broken tie wraps, poor



taped connectors, and loose bolts. They are much easier to fix now than when they totally fail during the winter during the middle of a contest or when you are chasing a rare DX station. Only use black tie wraps. They are the only ones that are UV protected. Even those are only good for 3-7 years in my experience.



I also had to replace the laptop I use for EME this month. I had 2 Windows 10 updates that made the laptop freeze up running WSJT-X. I can't use my desktop computer running windows 7 because it generates too much noise on 2 meters for EME operation. I decided to change computers and am using a purple kids starter laptop that seems to work fine for this application. It is interesting because it has all solid state memory and no hard drive like the old laptop. You can see what a typical JT65B QSO looks like on the new laptop.



I talked to our Swains contact in American Samoa last week. The good news is that they have had no COVID cases. The bad news is there are still no flights allowed into the country. After their measles epidemic last year they are taking no chances with COVID. When they do open up it is expected all non US citizens will have to arrive from Hawaii and quarantine 2 weeks there. This has been very hard on the American Samoa economy.

73 Steve AG4W

Shack Improvement Dreams

By Warren Alford, K4MMW

Dear Bob/K8KI,

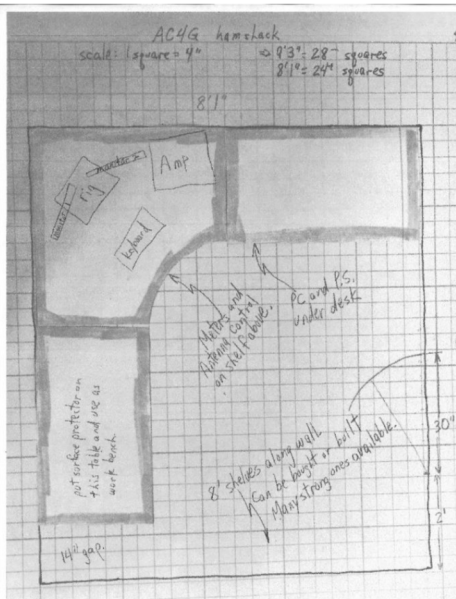
I know two things I would like to add to my ham Shack. I would like to see the quality of the signal coming out of my radio. If I have a bad signal I would like to be able to see it and be notified. Also I would like to have a good band scope. A frequency spectrum type device that would show all the transmissions across the whole band or you could down select to a narrower portion. I'm not saying that I'm going to do these things, but answering your question, "What would you do if you could", these would be two things I would investigate. There may be other items later.

73, Warren, K4MMW

Ham Station Comfort & Layout is Critical for Contesters & DXers—Final Chapter

By Bruce Smith, AC4G

In the last publication of the North Alabama DX Club (NADXC) newsletter, Longpath - May 2020 edition, I described my need and desire to renovate my ham shack to improve contesting and DXing efficiency. I cited many reasons why I needed to do this. Below in Picture 1 showing the simple layout to improve my operating abilities and increasing my contest scores to hopefully be a top contest contender, I have been busy trying to make my dream come true of having a first-class ham shack. The remainder of this article will describe and show the improvements made. This construction project forced me to clean out excess equipment and junk making the shack a better place to operate.



Picture 1: Future AC4G Ham Shack Configuration

After formulating a plan, I began removing everything out of the shack. My problem was to figure out where to permanently place my hunting gear and the extra ham radio treasures collected over the years. After figuring out a home for these treasures, I was on my way to removing “junk” and developing a first-class ham shack. My shack was originally a corn crib years ago.

As a reminder, the inside of the shack is shown in Picture 2 and shows the inefficient layout & mess in my shack. The space allowed for only one person to be in the shack and that was the operator. Visitors had to stand by the door to look in and see any activity and AC4G in action. My DX and contesting activity did not lead to fun operating due to the layout. Operating has been very, very inefficient.



Picture 2: Inside of AC4G Ham Shack Prior to Renovation (Feb. 2020)

In late-March thru late-May 2020, as time allowed I began my renovation project. Many of you perhaps saw the clutter in my shack as you visited us during the 2019 NADXC Annual Picnic and realize why I needed to spend time on my shack renovation. Photo 3 below shows the subfloor installed and floor AC electrical boxes being added. Photo 4 shows the drywall removed, new walls studs installed to frame the addi-



Photo 3: New Subfloor



Photo 4: New Window Installed



Photo 5: New Flooring

tion of a new window. Photo 5 shows the new fiber composite flooring being installed. This flooring is supposed to be “child proof”, “pet proof”, “scratchproof”, and “everyday life proof”. I am hoping this to be sturdy and endure the long hours of time DXing and contesting.

Photo 6 below shows the drywall being installed around the new window and new subfloor/floor. With a new window comes a new entrance door (Photo 7).

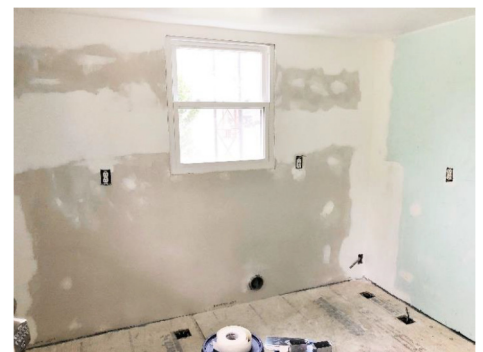


Photo 6: Drywall Work

As work nears completion, the walls have to be painted with an appealing, pleasant color since so much time will be spent in the new shack. Paint is being mixed by AC4G (Photo 8). A low yield, overhead light was added for activity after dark when the low band propagation picks up. Finally, the completed shack reveals her beauty after

Cont'd on p. 5

Ham Station Comfort & Layout is Critical

(cont'd from p. 4)

many hours of hard work and labor (Photo 9).

Part of the construction included adding base boards and quarter rounds to accent the floor and lower walls. The



Photo 7: Newly-installed door



Photo 8: AC4G mixing paint

during daylight hours, but also allows me to look outside at current weather conditions as I do not like operating during thunder storms. I have been lucky in the past to be able to hear thunder and disconnect antennas and power down as thunder storms approach.

And finally, it's complete (Photos 10 and 11). A tired AC4G taking-in the beauty and getting a breath of fresh air during a sigh of relief realizing the hard part is over. Was it worth all of the work? You bet! The cherry colored furni-



Photo 9: Completed shack

ture set alongside the walls and the corner will provide me an opportunity to operate reaching all controls from chair located in the corner of the room.



Photo 10: Furniture added



Photo 11: AC4G glad it's finished

The next step is to bring in the equipment (Photo 13), organize it, and set it up. Oops, we dropped an antenna switchbox during the transfer from the storage area to the new shack, but hopefully it survived the drop. The test will be during operation when switching between antennas. After a short period of time, I realized I need to build shelves for various other equipment such as antenna switches, low band receiving switches, and books that I have accumulated. These shelves will need to be either purchased or built from scratch.

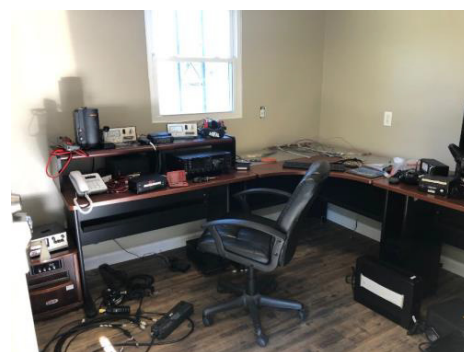


Photo 13: Installing Ham Radio Equipment

Not only did the inside get a facelift, but the outside of the shack had a few improvements. Photo 14 shows AC4G manually mixing concrete to improve the entrance to the shack. This walkway is constructed beside a 70 foot deep well (cistern) that used to supply the century-old farmhouse with water. The finished walkway near the



Photo 14: Mixing Concrete

Cont'd on p. 6

Ham Station Comfort & Layout is Critical

(cont'd from p. 5)

deep well is revealed in Photo 15.



Photo 15: Smooth Entrance Way

One last addition is the single point ground (Photo 16) for the station equipment, antennas, and AC service to single point ground (SPG). This in-



Photo 16: Single Point Ground

cludes the ground shield that's placed on the operator's desk just below the equipment and connected to SPG to improve noise and help control stray RF energy in the shack. Grounding and

bonding is very important for SPG which helps protect against lightning strikes and high EM fields. Also, note the service entry box where the rotor cables and feedline enter the AC4G shack.

In conclusion, a lot of planning, thought, true grit, determination, hard work, and elbow grease has gone into making my shack come to fruition. Thanks to my son, Zak and wife, Suzy who also helped in this endeavor. I have been inactive since mid-March 2020 missing a lot of contests and DX activity even the six-meter openings to Europe and Asia, but hoping my effort has not been futile, but worthwhile. Soon I will get my station setup and expect to see you in the pileups. Contesters and DXers beware!

73 Bruce/AC4G.

From the President

(cont'd from p. 1)

plished a total rejuvenation, and it looks breathtaking! The equipment hook-up isn't combat-ready quite yet, but will be very soon. I can't wait to see it, or to help him make it even better.

And Steve, AG4W, continues his race to improve every facet of his station. I'm more than impressed. I've tried moonbounce comm, and know how hard it is. Steve just passed 100 EME QSOs! It took a ton of good engineering to get there. Look closely at what Steve has accomplished. Take note of these efforts, and see if you can apply them to your own situation.

Has anyone else had troubles with Microsoft Updates? At least that's who I think is the culprit, but something has been regularly attacking my computer over the past 18 months, leaving me

with a dead ham station each time. I have AVG Internet Security on the machine, so it should be safe from most all disasters. AG4W had a similar problem last week. The IT businesses I've brought the computer to weren't exactly able to "pin the tail on the donkey." Anybody out there think they can find the villain in all of this?

We have several activities scheduled over the next few months. Next week-end we can operate in the June ARRL VHF contest. This one has not been a major effort in previous years, but this year our Warren Alford, W4MMW, has taken charge locally. HARC has been highlighting his efforts over the past few weeks. You should tune in to this one. Later in the month, we'll run ARRL Field Day (June 27-28). Due to the virus, we'll move to a new venue this

year, with a smaller footprint. The site will be the QTH of our Gary Suckow, W9SGM, in Toney. Again, tune in to HARC meetings for more details.

Since I've been only hobbling around for the past month, I haven't had quite the energy to dig up a new presentation for June. So (and I really hate to do this), you'll have to suffer through another one of my presentations on Tuesday. This one will be a tutorial on how to calculate and build simple, single-band antenna tuners, based on information you collect from an antenna analyzer. QEX Magazine just published it this month, and it's available for download from the ARRL.

Last month I wrote about wanting to start my tower project. I am happy to report that I have taken the first steps to making that a reality. I have moved my tower to a location where I can now work on it and begin the assembly process. I am so thankful I took a lot of pictures when the tower was removed from its original location. Without them I would not be able to put the lifting cables back on the tower. I have all the tower sections now nested together and have the first of the lifting cables reinstalled. This is a dry run before I order new tower hardware. I'm eating this elephant one bite at a time with my next bite being ordering all the hardware needed to replace old cables, rusted pulleys, and damaged fasteners.

From an operating perspective I have continued my push for DXCC on 17 meters. As of writing I have 72 confirmed with a few more expected to confirm soon. This has also helped me add to my overall mixed total which is now at 135. Last month's presentation by Bruce, AC4G, got me thinking about how 17 meters behaves. With our current sunspot activity I have noticed the band doesn't get going most days until mid-morning. However, in mid afternoon, between 2:30 and 4:30 it is possible to work all around the world. I have been able to work Kenya one minute followed by VKs and JAs the next. For a few minutes every day it is truly possible to work the world. One other thing I got from Bruce's talk was

when to listen for South East Asia. In the days following that discussion I made sure I was on the radio at around 7 AM on 20m. Sure enough, I heard several stations calling that I had never worked before. I am very happy to report that I was able to get two all time new contacts confirmed from Indonesia and East Malaysia. Not bad for 75 watts and a dipole on FT8. Thanks Bruce! Until next time, stay safe, and enjoy the DX.

73,
Kevin KG4TEI



DX Contests for June

By Chuck Lewis, N4NM

GACW WWSA CW DX Contest, (CW), 80-10 meters

June 13, 1500Z to June 14, 1500Z

Exchange: RST, CQ zone

See page 69, June QST and [con-test.com.ar/gacw-wwsa](http://test.com.ar/gacw-wwsa)

Asia-Pacific Sprint, (SSB), 20-15 meters

June 13, 1100Z to June 13, 1300Z

Exchange: RS, Serial #

See page 69, June QST and www.jsfc.org/apsprint/aprule.txt

Portugal Day Contest, (SSB/CW), 80-10 meters

June 13, 1200Z to June 14, 1200Z

Exchange: RS(T) and Serial or district code

See page 69, June QST, and http://www.rep.pt/portugal_day_contest

All Asian DX Contest (CW), 160-10M

June 20, 0000Z to June 21, 2359Z

Exchange: RST plus age; YLs send 00

See page 69, June QST and www.jarl.org/English

Stew Perry Topband Challenge (CW), 160 meters

June 20, 1500Z to June 21, 1500Z

Exchange: 4-character grid square

See page 69, June QST and <http://www.kkn.net/stew/>

IARU HF World Championships (SSB/CW), 160-10M

July 11, 1200Z to July 12, 1200Z

Exchange: RS(T) plus ITU zone; IARU HQ stns send HQ abbrev.

See <http://www.arri.org/iaru-hf-championship>

OTHERS:

Ukrainian DX Classic DIGI Contest,

1200Z, Jun 20 to 1159Z, Jun 21

His Maj. King of Spain Contest, SSB,

1200Z, Jun 27 to 1200Z, Jun 28

Marconi Memorial HF Contest (CW),

1400Z July 4 – 1400Z, July 5

Dates & times often change or are misprinted in the journals; beware.

Chuck, N4NM

Huntsville Hamfest

(cont'd from p. 1)

Unfortunately this is not the case and with deep sadness the Board has voted to cancel Huntsville Hamfest 2020. We make this decision for the safety of our Visitors, Vendors, and Volunteers.

We will be back and hope to see you back at "The World's Friendliest Hamfest"™ on August 21 & 22, 2021.

73, Mark N4BCD – Chairman – Huntsville Hamfest

The following by Art Davis N4UC was also sent to Commercial and Flea Market Vendors on June 4.

The Board of Directors of the Huntsville Hamfest met Wednesday night and unanimously voted to immediately suspend planning for the 2020 Hamfest. This was a very painful decision that was reached after many hours spent since March with City officials, Von Braun Center management, and organizers of other similar shows in Huntsville to understand what was required of us to comply with the rapidly changing rules for large shows and determine

what impacts those rules were having on other shows. Despite the complexity of those rules, we were hoping to gain confidence that we would be able to keep from breaking a 54-year tradition of August shows here. Although State-mandated rules for protections are beginning to ease up, it has become obvious that emotional uncertainty and fear for individual health is still very much alive among the Hamfest-going demographic and will be for a long time to come.

At this point there is no way to predict if or when those fears will subside. So we decided that it would be in the best interest of the vendors and workers, as well as the attending public, to let people feel free to use their best judgment in managing their own health concerns without subjecting them to an uncertain risk just to attend a Hamfest. We also didn't feel that we, in good conscience, could ask vendors to spend their money and resources to come to a show where we could neither give them a reasonable estimate of

attendance or provide the quality of services that have come to be expected from Huntsville Hamfest.

On behalf of the Board members, I thank all of you for the expressions of hope and confidence you have shared with us during all this confusion. We will now focus our efforts and attention to Huntsville Hamfest 2021 and looking forward to having another record-breaking year as we enjoyed last year!

It is our wish for all of you that you stay safe and prosperous until we can meet again next year.

As promised, all money received from you will be refunded by the same method that it was paid. You do not have to apply for your refund, but let us know if you haven't received your payment in the next 30 days. Also notice the directions for hotel refunds.

Best wishes and 73,

Art Davis N4UC

Vice President and Dealer Show Chairman, Huntsville Hamfest

May Meeting Minutes

By Chris Reed, AI4U

The May meeting was called to order on Zoom and the N4QB repeater by Bob, K8KI.

Twenty-three members and three guests attended via Zoom. Bob, K8KI made a few announcements including that Steve, AG4W had won the CQ WW RTTY DX Contest as Single Op High Power 160M entry. Bob also announced that Steve, KY4G had updated the DXCC list for the club.

The meeting was adjourned and turned over to AC4G, Bruce Smith. Bruce presented the program "The Magic of Early Morning Southwest Propagation"

73,

Chris AI4U

Treasurer's Report

By Chris Reed, AI4U

The balance as of May 30 was \$8,989.68

Single-Band Tuners

June Program by Bob, K8KI

Check out Bob's article in QEX regarding simple single-band antenna tuners. Bob will recap this article and explain how its done at Tuesday's Zoom meeting. The meeting will being at 7:00 pm, with any further information in Bob's Zoom invitation email.

The LongPath Staff

Publisher/Editor: Tom Duncan, KG4CUY

Departments:

Chuck Lewis, N4NM, DX Contests

Chris Reed, AI4U, Minutes

Bob De Pierre, K8KI, From the President

Steve Molo, KI4KWR, VP Corner

Kevin Hibbs, KG4TEI, The Casual DXer

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Vice President **Steve Molo, KI4KWR**

Secretary/ **Chris Reed, AI4U**

Treasurer

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Directors **Tom Duncan, KG4CUY**

(Ex-Officio) **Steve Werner, AG4W**